

What is claimed is:

1. A compact ratchet wrench for attaching or removing a threaded fastener, said wrench comprising:

a wrench head made integral with a wrench handle;

a jaw and gear assembly including first and second jaws and a gear unit, wherein said jaws are carried and guided by said gear unit to translate with respect to one another and wherein said gear unit is carried by said wrench head and is free to ratchet within said wrench head;

a jaw adjuster assembly including a jaw adjuster disk connected to a scroll plate positioned interior to a cap, wherein rotation of said jaw adjuster rotates said scroll plate within said cap and wherein said scroll plate is made to interface with said jaws; and

first and second support rails that assemble and hold said jaws within said gear unit and rotationally support said jaws and gear assembly connected with said wrench head, wherein said jaws can be opened and closed by rotating said scroll plate when said jaw adjuster assembly is connected with said jaw and gear assembly so that said jaws mesh with said scroll plate.

2. The wrench of claim 1 including a pawl assembly positioned within a pawl cutout of said wrench head to mesh with said gear unit so that rotation of said wrench handle and head ratchets the connected jaw adjuster assembly and said jaw and gear assembly to attach or remove the fastener.

3. The wrench of claim 2 wherein said pawl assembly includes a pawl and a pawl adjuster for ratcheting the gear unit in both rotational directions with respect to the wrench head and a spring button to hold said pawl to ratchet in a preferred direction.
4. The wrench of claim 1 wherein said first and second jaws both include a jaw proturbance on a top surface and said scroll plate includes first and second cam grooves on a bottom surface, wherein said jaw proturbances mesh with said cam grooves so that rotation of said scroll plate opens and closes said jaws.
5. The wrench of claim 4 wherein said jaw proturbances are offset one to the other so that said cam grooves can have an extended length and said scroll plate can be rotated through a relatively large angle to achieve jaw displacements that accommodate a wide range of fastener sizes.
6. The wrench of claim 5 wherein said first and second cam grooves of said scroll plate extend over a cam length such that said scroll plate can be rotated through a rotational angle of about 200 degrees.
7. The wrench of claim 1 wherein said jaw adjuster assembly includes a coil spring connected between said cap and said scroll plate to bias said scroll plate in a position to keep the distance between said jaws at a minimum when engaged with the fastener.

8. The wrench of claim 1 wherein said jaw adjuster assembly includes a snap ring placed in a disk groove of said jaw adjuster disk to extend into an adjacent scroll plate groove of said scroll plate to connect said jaw adjuster disk with said scroll plate so that they rotate as a unit within said cap.
9. The wrench of claim 1 wherein said connection of said jaw adjuster assembly with said jaw and gear assembly is realized by providing gear splines on an exterior gear unit surface that meshes with a cap splines on an interior cap surface so that pressing said cap over said gear unit completes the assembly process.
10. The wrench of claim 2 wherein said gear unit includes gear teeth surface disposed around the outer surface of the gear unit to mesh with the pawl of the pawl assembly to ratchet the connected jaw adjuster assembly and jaw and gear unit assembly within said wrench head.
11. The wrench of claim 10 wherein said gear unit includes an upper o-ring at the top of the gear teeth surface and a bottom o-ring at the bottom of the gear teeth surface to provide a seal for keeping debris from the gear teeth surface and pawl, as well as provide less need for frequent lubrication of the gear teeth surface.
12. An adjustable ratchet wrench tool for installing and removing fasteners of various size comprising:

a cylindrical wrench head with a pawl cutout carried at one end of an elongated wrench handle;

a gear unit placed inside said cylindrical wrench head to rotate freely within said cylindrical wrench head;

a pawl assembly positioned in said pawl cutout to interface with said gear unit to provide a ratcheted rotation when the wrench handle is rotated in both rotational directions with respect to said gear unit;

a pair of jaws, each with a jaw protrusion on a top surface, held partially inside and guided by said gear unit to translate with respect to one another;

a pair of support rails to connect said jaws with said gear unit and to support said jaws and said gear unit from said cylindrical wrench head;

a scroll plate having a top connector post and a pair of bottom cam grooves, said cam grooves each interfacing with a respective jaw protrusion of said jaws when the scroll plate is symmetrically positioned above said jaws and said gear unit;

a cap having cap splines on an interior surface fits over said scroll plate and interfaces with gear splines on an exterior surface of said gear unit so that said scroll plate remains in contact with said jaws to receive said jaw protrusions; and

a jaw adjuster disk connected with said connector post of said scroll plate so that rotation of said jaw adjuster disk rotates said scroll plate within said cap, wherein rotation of said scroll plate translates said jaws one with respect to the other to accommodate different fastener sizes.

13. The tool of claim 12 where in said elongated wrench handle and said cylindrical wrench head are made as a single unit.

14. The tool of claim 12 including an articulated joint assembly to connect said elongated wrench handle with said cylindrical wrench head so that an angle between a central axis of the wrench head can vary with respect to an axis of said cylindrical wrench head.

15. The tool of claim 12 including a snap ring placed in a disk groove of said jaw adjuster disk to extend into an adjacent scroll plate groove of said connector post of said scroll plate to connect said jaw adjuster disk with said scroll plate so that they rotate as a unit.

16. The tool of claim 12 including a coil spring connected between said cap and said scroll plate to bias said scroll plate in a position to keep the distance between said jaws at a minimum when in use adjusting the fastener.

17. The tool of claim 12 wherein said pawl assembly includes a pawl and a pawl adjuster for ratcheting the gear unit in both rotational directions with respect to the cylindrical wrench head and a spring button to hold said pawl to ratchet in a preferred direction.